Esthetic rehabilitation of discolored anterior teeth with porcelain veneers

Vaibhav D. Kamble, Rambhau D. Parkhedkar[1]

Abstract

The common man is bombarded by the media extolling the virtues of "the perfect smile." In the 21st century of esthetic dentistry, fractured, malformed, malposed, and discolored teeth can be changed and restored to highly desirable form due to introduction of wide range of esthetic materials and techniques. Porcelain veneers is a conservative method of restoring the appearance of discolored, pitted teeth, and teeth with diastemas that provide extremely good esthetic results. A 21-year-old female patient with staining in anterior teeth had reported to the Department of Prosthodontics for esthetic rehabilitation. The patient was treated with porcelain veneers on maxillary anterior teeth. The patient was satisfied with the enhanced esthetic appearance.

Keywords: Esthetics, fluorosis, pitted teeth, porcelain veneers

Introduction

Re-establishment of proper esthetics and function in the anterior region is utmost important for the patient. Discolored, unsightly, malposed, malformed anterior teeth and midline diastemas can make the individual psychologically depressed and socially less active. The relentless pace of innovation and development in restorative materials culminates in offering clinicians a whole plethora of esthetic materials with different techniques. Advances in the technology of bonding porcelain to enamel created the possibility of porcelain veneers as an alternative to the use of full crowns for the treatment of many clinical conditions, such as treatment of diastemas, misaligned teeth, worn dentition, chipped teeth, and excessively discolored teeth.[1] Porcelain veneers is a conservative method of restoring the appearance of discolored, pitted teeth, and teeth with diastemas that provides extremely good esthetic results and alternative to more extensive restorative procedures.

Departments of Prosthodontics, VSPM's Dental College and Research Center, Nagpur, [1]Saraswati Dhanwantri Dental College, Parbhani, Maharashtra, India

Correspondence: Dr. Vaibhav D. Kamble, Department of Prosthodontics, VSPM's Dental College and Research Center, Digdoh Hills, Hingna Road,
Nagpur - 440 019, Maharashtra, India.
E-mail: vaibhavk056@gmail.com

Access this article online	
Quick Response Code:	Website: www.contempclindent.org
	DOI: 10.4103/0976-237X.111635

Case Report

Case history, diagnosis, and treatment planning

A 21-year-old girl had reported to the Department of Prosthodontics in Government Dental College and Hospital, Nagpur with the chief complaint of discolored teeth. Clinical examination revealed that all maxillary anterior teeth were discolored with brownish bands of discoloration prominently on the middle third and cervical third without any pitting or grooves [Figure 1]. Due to young age, patient was insisting for esthetic correction of anterior teeth. The clinical examination and history revealed that the present discoloration was due to fluorosis stains. Radiographic and clinical examination did not reveal any periapical pathological condition, so esthetic correction with more conservative procedure and porcelain veneers for maxillary anterior teeth were planned. Diagnostic impressions were made and diagnostic wax-up was carried out. The teeth were esthetically contoured and then prepared for porcelain veneers.

Tooth Preparation

The teeth were prepared for veneer thickness starting with the labial surface using depth cutting burs from mesioproximal line angle to distoproximal line angle. Three-depth cuts in each cervical, middle, and incisal third of the teeth were prepared with the dimension of 0.3, 0.5, and 0.7 mm, respectively. Finish line was established using a long tapered medium or fine grit snub-nosed diamond bur. A definitive chamfer margin (0.3-0.4 mm in depth) was prepared beginning at the height of the free gingival margin and extended toward distal papilla tip and then toward mesial papilla tip. The chamfer margin was continued from distal papilla tip to beginning of contact point, far enough lingually to hide veneer margin when viewed from labial side. Without breaking the contact from labial side, the finish line was carried from this point to the incisal embrasure, cutting just labial (0.2 mm) to entire contact area. Similarly, the tooth was prepared on mesial side. After placing finish line, the

land area between the depth cuts was removed. The incisal edges were prepared to provide the bulk for the porcelain (0.75-1.5 mm, average 1 mm). The preparations were terminated at linguoincisal line angle [Figures 2]. Once the preparation was completed, impressions were made using polyvinyl siloxane impression material (Examix; GC America Inc., Alisip, Illinois, USA) by putty-wash technique [Figure 3], and cast is poured in vacuum-mixed Type IV Gypsum Product (Ultrarock; Kalbhai Karson Pvt. Ltd., Mumbai, India) according to the manufacturer's recommendations. Stone dies were carefully separated from the impressions and two coats of die spacer (Spacer-Tray, Kerr) were applied 0.5 mm short of the finish line of the preparations. The veneers were waxed-up to dies and they were fabricated from lithium disilicate-reinforced glass ceramic material (IPS Empress 2) using the heat press technique according to the manufacturer's recommendations.

Try-in of Porcelain Veneers

All porcelain veneers were tried on the working model. The teeth surfaces were first cleaned with slurry of fine flour of pumice. The proximal areas were finished with fine composite finishing strips. Each porcelain veneer was individually tried starting from distal tooth. Glycerin was used as temporary luting medium for try-in. The intimate adaptation, margin, and shade of each porcelain veneer were checked and interferences in eccentric movements were removed. The porcelain veneers were finished and glazed.

Figure 1: Intra-oral view: Discolored maxillary anterior teeth

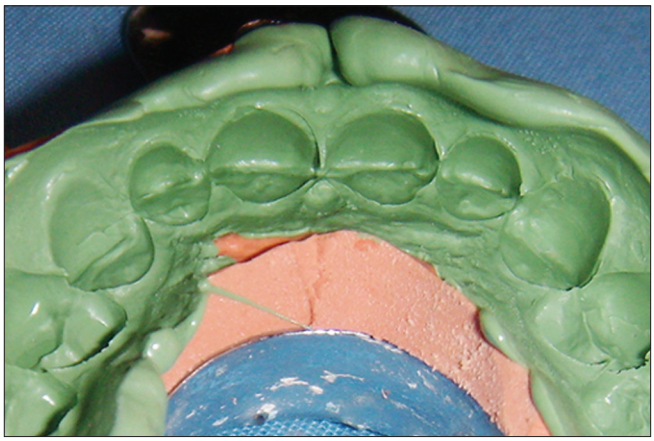

Figure 3: Impression with polyvinyl siloxane impression material (Putty-Wash technique)

Cementation of Porcelain Veneers

The inner surface of porcelain veneers was treated with air-particle abrasion using 50 µm Al_2O (Korox, Bego, Germany) with a chair side air-abrasion device (CoJet, 3M-ESPE, Germany) from a distance of 10 mm at a pressure of 250 kPa bar for 10 s. Then, each surface treatment was followed by acid etching with 9% hydrofluoric acid (Pulpdent Corporation, USA) prior to silanization. A silane coupling agent (Pulpdent Corporation, USA) was applied to the internal veneer surface for 60 s and air-dried. Gingival retraction cord was placed on the prepared teeth to decrease the crevicular fluid flow. During cementation procedure, each tooth was etched for 15 s using a 37% phosphoric acid etch-gel (Alpha-Etch 37, Dental Technologies, USA). Subsequently, the tooth surface was rinsed thoroughly and air-dried gently. Dentin primer and adhesive were applied

Figure 2: Tooth preparation: Frontal view

Figure 4: Cementation of porcelain veneers: Frontal view

as the preparation reached dentin structure, according to the manufacturer's instructions (Clearfil, Kuraray). Following the bonding application, a thin layer of light polymerizing composite resin luting cement was applied at the intaglio surface of the veneers, placed onto the prepared teeth and light-polymerized for 40 s (Elipar Free Light, 3M ESPE) from palatal, labial, and incisal sides. Excess luting cement was removed and the marginal area was finished and polished with abrasive discs. Restorations were checked to avoid any occlusal interference. The patient was satisfied with her new smile line and excellent view of the anterior teeth [Figure 4]. Patient was recalled in 2 days and encouraged for better dental flossing and also recalled every 6 months for periodical controls. No complication was observed during 3 years clinic service.

Discussion

Veneers is considered to be a more conservative treatment approach than full crowns because preparation of the teeth for veneers requires less tooth reduction than full crown preparations. Porcelain veneers provide precise color match and translucency to the natural tooth and fulfill the need for adequate retention.[1] Porcelain veneers are very suitable for young adults who have large pulp chambers and pulp horns close to the teeth enamel surface. For these types of restorations, the preparation does not cause the reduction of axial walls resulting in preservation of tooth structure and the surrounding hard and soft tissue architecture.[2] Porcelain veneers have become the major modality of treatment when conservative aesthetic restoration of anterior teeth is needed. Minimally invasive preparation designs and modern ceramic materials make this treatment option increasingly conservative to the natural tooth structures, while providing both predictable and long-lasting aesthetics.[3-5] Porcelain veneers ensure color and translucency close to those of the natural tooth as well as fulfilling the need for adequate retention, while preserving maximum remaining tooth structure.[6] Porcelain veneers involving the incisal edge, proximal areas, and parts of the palatal surface have been recognized as an alternative to full crowns in the anterior dentition. The versatility of veneers allows them to be used with a variety of preparation forms, from simple facial veneers to more complex restorations that involve the replacement of more tooth structure.[7] The use of porcelain veneers to solve esthetic and/or functional problems in the anterior section has been shown to be a convincing option. Years of experience with both the technique and the materials employed offer satisfactory, predictable, and lasting results.[3] Porcelain veneers restore the mechanical behavior and microstructure of the intact tooth *in vitro* even when they are bonded to an extensive dentin surface using an optimized application mode of dentine adhesives.[5]

Conclusion

Advancement in the technique, ceramic materials, and luting cements made porcelain veneering the most accepted treatment for esthetic correction of the anterior teeth over full coverage restorations. This case report presents an esthetic rehabilitation of discolored maxillary anterior teeth.

References

1. Ishikawa-Nagai S, Yoshida A, Sakai M, Kristiansen J, Da Silva JD. Clinical evaluation of perceptibility of color differences between natural teeth and all-ceramic crowns. J Dent 2009;37:e57-63.
2. Chen YW, Raigrodski AJ. A conservative approach for treating young adult patients with porcelain laminate veneers. J Esthet Restor Dent 2008;20:223-36.
3. McLean JW. Evolution of dental ceramics in the twentieth century. J Prosthet Dent 2001;85:61-6.
4. Peumans M, Van Meerbeek B, Lambrechts P, Vanherle G. Porcelain veneers: A review of the literature. J Dent 2000;28:163-77.
5. Magne P, Douglas WH. Porcelain veneers: Dentin bonding optimization and biomimetic recovery of the crown. Int J Prosthodont 1999;12:111-21.
6. Sevük C, Gür H, Akkayan B. Fabrication of one-piece all-ceramic coronal post and laminate veneer restoration: A clinical report. J Prosthet Dent 2002;88:565-8.
7. Crispin BJ. Expanding the application of facial ceramic veneers. J Calif Dent Assoc 1993;21:43-6, 48-9, 52-4.

How to cite this article: Kamble VD, Parkhedkar RD. Esthetic rehabilitation of discolored anterior teeth with porcelain veneers. Contemp Clin Dent 2013;4:124-6.

Source of Support: Nil. **Conflict of Interest:** None declared.